1-1-1972

Classroom verbal interaction and pupil learning

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CLASSROOM VERBAL INTERACTION AND PUPIL LEARNING

by

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A RESEARCH PAPER
SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS IN EDUCATION
AT THE CARDINAL STRITCH COLLEGE

Milwaukee, Wisconsin

1972

This research paper has been approved for the Graduate Committee of the Cardinal Stritch College by

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Date Feb. 29, 1972

ACKNOWLEDGMENTS

As a young teacher, recently graduated from college, I had the good fortune to meet and to work with a most unusual person. Prior to that time, I had never met anyone quite like him, nor have I found his equal since. As an educator, his vision was projected many years ahead of his time; in love and concern for his fellow man, his dedication had the characteristics of a true Christian. His devotion and loyalty to community and country ranked him among the greatest patriots in our history; in appearance and bearing he might have been another Lincoln.

While I worked with this most remarkable man, I had the opportunity to observe in action, the qualities of character and personality that make a teacher great. The experience of that former time, and the memory now, of my contacts with this particular human being influenced me in a way that gave depth and meaning to my entire lifetime.

If in this paper there may appear any thoughts or ideas that seem useful and valuable to others, I can truthfully say that they were inspired in great measure by the special person who first revealed them. Therefore, I dedicate this paper in loving memory to that unique member of our human family--Jesse Lowe Smith.

I wish to extend my thanks to all the members of the Cardinal Stritch College faculty and the library staff who were helpful in the preliminary work that preceded the writing of this paper. Special thanks are due to Mr. George Cretilli, whose gentle insistence upon perfection helped to discipline my thinking. Especially, I wish to thank my daughter, Mary Patricia, for her many hours at the typewriter while the paper was being developed. Mary Schubilske has my sincere thanks for her excellent work in the typing of the final copy.

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CHAPTER I

THE PROBLEM AND ITS SIGNIFICANCE

Introduction

"One of the most significant developments in education today is the intensified concern so many teachers are showing for the nature of their relationship with their students."[1]

As we consider the complexities of this relationship, our attention is drawn to one of its more important and critical aspects, namely, the quality of the verbal interaction between the teacher and his pupils.

Within the social system of the classroom, the teacher, as leader, is cast in a significant role. How effectively he plays that role in terms of his personal relationship with his students, depends upon his ability to communicate with them. Since communication takes place largely through the use of spoken language, it appears that the verbal behavior of the teacher is a critical factor in

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[1]Harold Howe, United States Commissioner of Education, Washington, D.C., Foreword, Raymond H. Reno, The Impact Teacher (St. Paul, Minnesota: 3M Educational Press, 1967).

the type of response he elicits from his students. Moreover, within the verbal interaction pattern between teacher and student, we may discover dynamics that are powerful enough to enhance or to inhibit the learning process.

The Problem

The primary purpose of this paper is to focus attention upon verbal interaction patterns between teachers and students in the classroom. The writer agrees with Edmund Amidon when he states that "the key to developing more effective classroom verbal behavior is the opportunity to experiment with and practice desired communication skills."[1] She will attempt to show how these interaction patterns and communication skills affect the learning process.

Importance of the Study

The writer feels that the study has importance because, during her professional life, she has, on many occasions, listened to verbal transactions between teachers and students. These exchanges can have a positive or negative effect upon both teacher and student, depending largely upon the emotional tone of the communication. The two participants in the dialogue carry a responsibility to keep verbal interaction positive, kindly, courteous and productive, but of the two,

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[1]Edmund J. Amidon with Ned A. Flanders, The Role of the Teacher in the Classroom, 1st rev., ed. (Minneapolis, Minn.: Association for Productive Teaching, 1971).

the teacher bears the greater responsibility, because of his maturity, his greater power to control his speech, and his sincere desire to help his student.

Psychologists tell us that spoken words have a profound effect upon human behavior. The writer has watched unhappy people (children and adults) take heart once more as they listen to words of encouragement. In contrast, the curt or disparaging remark can wither and wound the human spirit so severely that the victim, temporarily at least, becomes in a sense paralyzed and unable to function, especially on an intellectual level.

Limitations of the Study

Our study is concerned principally with communication as it affects learning. Although communication among human beings may take place in a variety of ways, we shall focus our attention particularly on verbal communication and its effects upon individuals involved in an educational setting.

The teaching-learning process appears to be essentially a matter concerned with inter-personal relationships. The harmonious relationship enhances learning. The relationship that is "out of tune" inhibits it. The writer believes that the quality of the personal relationship is affected by the kinds of verbal communication that take place within it, and that these forces, working together, exert a profound effect upon the learning process.

CHAPTER II

REVIEW OF THE LITERATURE

Recent research studies in relation to the reading process suggest that teacher characteristics and teaching styles may play a vital role in determining the level of pupil reading achievement. Differences among teachers may be far more significant than differences among methods or materials in affecting the reading achievement of children. Actual knowledge of the kinds of teacher behavior associated with good and poor reading achievement of pupils is limited. One approach that seems useful in studying teacher characteristics and teaching styles is the analysis of teacher-pupil verbal interaction in the classroom. The few studies which have employed this type of analysis in the teaching of reading suggest that more effective pupil achievement seems to be associated with a classroom atmosphere that induces a high proportion of pupil involvement in classroom activities.

One of the most widely used and best known systems for examining verbal interaction in the classroom was developed by Flanders in the 1950's at the University of Minnesota.[1]

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[1] Edmund J. Amidon with Ned A. Flanders, The Role of of the Teacher in the Classroom, 1st rev., ed. (Minneapolis, Minn.: Association for Productive Teaching, 1971).

In the Flanders system of interaction analysis, ten categories are used to classify the verbal behavior of teachers and students. Seven of the ten categories describe teacher behavior as indirect teacher influence (teacher maximizes freedom of students to respond) or direct teacher influence (teacher minimizes freedom of students to respond). The indirect influence is assumed to make the student less dependent upon the teacher. Of the three remaining categories, two describe student talk, while the last category covers silence or confusion and is used to describe anything that is not teacher or student talk.

In studies in Minnesota and New Zealand, Flanders found that pupils of teachers rated high in use of indirect verbal patterns had higher achievement and more desirable attitudes toward their work and fellow pupils than pupils of teachers using more direct verbal patterns.[1]

Furst and Amidon used the Flanders system to study differences in interaction patterns among the elementary school grades in the teaching of reading and various content areas. They found that teachers tended to be more direct (lecture more) in social studies than in reading and arithmetic, and that first, fifth, and sixth grade teachers did more

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[1]N. A. Flanders, Teacher Influence, Pupil Attitudes, and Achievement. Cooperative Research Monograph No. 12, Office of Education, United States Department of Health, Education and Welfare (Washington, D.C.: United States Government Printing Office, 1965).

talking during the social studies.[1] Praise was used most frequently by early primary and intermediate grade teachers.

Morrison studied teacher pupil interaction within three patterns of elementary classroom reading organization.[2] She found that the use of the same text for all pupils resulted in lack of pupil-teacher involvement while use of multi-level and supplementary materials produced more positive and educationally sound relationships.

Categorizing student and teacher behavior during a series of two minute samples, Perkins, in a study of underachievement of high ability fifth graders, found that teacher lecturing and criticizing was related to loss in reading comprehension and to pupil withdrawal.[3] Soar found that the greatest gains in vocabulary occurred when the teacher maximized freedom of expression in her teaching.[4] Herman analyzed

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[1]Norma Furst and E. Amidon, "Teacher-Pupil Interaction Patterns in the Teaching of Reading in the Elementary School," The Reading Teacher, XVIII, (1965), 283-287.

[2]Virginia B. Morrison, "Teacher-Pupil Interaction in Three Types of Elementary Classroom Reading Situations," The Reading Teacher, XXII (1968), 271-275.

[3]H. V. Perkins, "Classroom Behavior and Underachievement," American Educational Research Journal, II (1965), 1-12.

[4]R. S. Soar, "Pupil Needs and Teacher-Pupil Relationships: Experiences needed for Comprehension in Reading," in E. J. Amidon and J. B. Hough (eds.) Interaction Analysis: Theory, Research and Application (Reading, Mass.: Addison-Wesley, 1967).

the teacher pupil verbal interaction in sixty-five classes of fifth graders and found that as the intelligence level of a class increased, the teacher's verbal pattern was more flexible and democratic and activities tended to be more pupil-centered than teacher-centered.[1]

As knowledge gained from research based upon pupil-teacher verbal interaction analysis increased, a number of investigators developed other systems or modifications of current ones to study the relationship between teaching strategies and various cognitive processes including critical reading ability. Gallagher and Aschner,[2] 1963; Taba, et al,[3] 1964; Wolf, et al,[4] 1967; and Davidson,[5] 1969. These investigators agree that the nature of the questions employed by the teacher and the strategies he uses in leading pupils' thought from one level to another are central in influencing the depth of thinking developed among pupils. The use of

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[1]W. L. Herman, Jr. "An Analysis of the Activities and Verbal Behavior of Selected Fifth Grade Social Studies Classes," Journal of Educational Research, LX (1967), 339-345.

[2]J. J. Gallagher and Mary Jane Aschner, "A Preliminary Report on Analyses of Classroom Interaction," Merrill-Palmer Quarterly, IX (1963), 183-194.

[3]Hilda Taba, S. Levine and F. Elzey, Thinking in Elementary School Children, Cooperative Research Project No. 1574 (San Francisco: San Francisco State College, 1964).

[4]Willavene Wolf, Charlotte S. Huck, Martha L. King, Bernice D. Ellinger and B. M. Gansneder, Critical Reading Ability of Elementary School Children. (Final Report of Project No. 5-1040, Office of Education, U.S.Department of Health, Education and Welfare (Columbus, Ohio: Research Foundation, The Ohio State University, 1967).

[5]R. Davidson, "Teacher Influence and Children's Level of Thinking," The Reading Teacher, XXII (1969), 702-704.

clarifying questions and slow-paced teacher-pupil interaction which allows time for pupil thinking are vital teacher strategies.

Davidson suggests that feedback based upon data from interaction analysis can be used by teachers to refocus their teaching strategies to exert greater effect on levels of children's thinking.[1] The analysis of teacher-pupil interaction based upon discussions during lessons developing critical reading skills suggests possibilities of wider application of this technique in the examination of discussions during the teaching of other reading skills such as reading comprehension. Taba's multidimensional model for interaction analysis provides a scheme for coding and classifying the teacher's behavior in terms of teacher functions and the pupil's responses in a way that describes the type and level of thinking activity.[2] While such coding schemes may be somewhat awkward, they offer promise for taking a closer look at what really goes on in the classroom between teacher and pupil during the process of learning to read.[3]

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[1] R. Davidson, op. cit., pp. 702-704.

[2] Hilda Taba, S. Levine and F. Elzey, Thinking in Elementary School Children, Cooperative Research Project No. 1574 (San Francisco: San Francisco State College, 1964).

[3] J.W.Schneyer, "Classroom Verbal Interaction and Pupil Learning," The Reading Teacher, XXIII (1970), 369-371.

Research on Teacher Behavior

Early Studies of Teacher Behavior

In our society the authority to direct the learning activities of the student is given to the teacher. Both the teacher and the students expect the teacher to take charge, to initiate learning activities, and to contribute information as needed in the learning process. What the teacher does with his power makes a great deal of difference.[1]

This section of the chapter contains a description of some of the research conducted on teacher behavior in order to suggest the kinds of consequences the teacher may expect as he takes one role or another. A review of these studies also provides the background from which arose the system of observation described herein.

None of the research about to be reviewed concludes that any one pattern of teacher behavior is superior to another under all conditions. In several studies, contrasting patterns are described and named, and the different consequences for the various patterns reported. The roles taken by teachers or group leaders in these early experiments were quite broadly defined.[2]

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[1] D. H. Jenkins, "Characteristics and Function of Leadership in Instructional Groups," The Dynamics of Instructional Groups, Fifty-ninth Yearbook of the National Society for the Study of Education, Part II (Chicago, Ill.: University of Chicago Press, 1960), pp. 164-184.

[2] E. J. Amidon and Ned A. Flanders, op. cit., p. 72.

As a result of participating in classroom activities, pupils soon develop shared expectations about how the teacher will act and what kind of person he is and feelings about how they like their class. These expectations and feelings color all aspects of classroom behavior, creating a social atmosphere or climate that appears to be fairly constant, once established.[1]

The earliest systematic studies of spontaneous pupil and teacher behavior were those of Anderson, Brewer, and Reed.[2]

The qualitative differences that were determined between an integrative (indirect) and a dominative (direct) social contact by these researchers established distinctions that have been followed in general ways by most of the research on teacher behavior since that time:

> A preliminary study showed that it was possible to devise reliable measures of behavior of young children. Behavior was recorded as 'contacts' and divided into two groups of categories. If a child snatched a toy, struck a playmate or commanded him, or if he attempted to force him in some way, such contacts were included under the term 'domination'. By such behavior he ignored the rights

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[1] E. J. Amidon and Ned A. Flanders, op. cit., p. 72.

[2] H. H. Anderson, "The Measurement of Domination and of Socially Integrative Behavior in Teacher's Contacts with Children," Child Development, X (1939) 73-89; H. H. Anderson and J. E. Brewer, Studies of Teachers' Classroom Personalities, I: Dominative and Socially Integrative Behavior of Kindergarten Teachers, Psychological Monographs, No. 6, 1945; H. H. Anderson and J. E. Brewer, Studies of Teachers' Classroom Personalities, II: Effects of Teachers Dominative and Integrative Contacts on Children's Classroom Behavior, Psychological Monographs, No. 8, 1946; H. H. Anderson, J.E.Brewer and M.F.Reed, Studies of Teacher's Classroom Personalities, III: Follow-up Studies of the Effects of Dominative and Integrative Contacts on Children's Behavior, Psychological Monographs, No. 11, 1946.

> of the companion; he tended to reduce the free interplay of differences and to lead toward resistance or conformity in responding or adapting to another.
>
> Other contacts were recorded which tended to increase the interplay of differences. Offering a companion a choice, or soliciting an expression of his desires were gestures of flexibility and adaptation. These tended in the direction of discovering common purposes among differences. Such contacts were grouped under the term 'socially integrative behavior.'[1]

The findings of Anderson, Brewer and Reed are based on the study of pre-school, primary, and elementary school classrooms involving five different teachers and extending over several years.[2] Taken altogether, their imaginative research has produced a series of significant findings.

First, the dominative (direct) and integrative (indirect) contacts of the teacher set a pattern of behavior that spreads throughout the classroom; the behavior of the teacher, more than any other individual, sets the climate of the class. The conclusion is that when either type of contact predominates, domination stimulates further domination, and integration stimulates further integration. It is the teacher's principal behavior pattern that spreads among pupils and is taken over by them even when the teacher is no longer in the room. Furthermore, the pattern a teacher develops in one year is likely to be continued by him the following year with different pupils.[3]

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[1] H. H. Anderson, "The Measurement of Domination and of Socially Integrative Behavior in Teachers' Contacts with Children," Child Development, X (1939), 73-89.

[2] H. H. Anderson, op. cit., pp. 73-89.

[3] H. H. Anderson, op. cit., pp. 73-89.

Second, when a teacher established a higher proportion of indirect contacts, pupils show more spontaneity and initiative, voluntary social contributions, and contributions to problem-solving.

Third, when a teacher has a higher proportion of direct contacts, the pupils are more easily distracted from school work and show greater compliance to, as well as rejection of, teacher domination.

A year or so after Anderson[1] started his work, Lippitt and White[2] working with Kurt Lewin, carried out laboratory experiments to analyze the effects of adult leaders' influence on boys groups. The laboratory approach used had certain advantages in studying the effects of the adult leaders' behavior. First, the contrasting patterns of leader behavior were clearly defined in advance and were made more consistent as a result of training and role playing. Second, differences in the underlying personality and appearance of the adult leaders were controlled through role rotation. Third, the effect of the pattern of leader behavior was intensified when compared with a classroom since there were only five boys to a group.

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[1] H. H. Anderson, "The Measurement of Domination and of Socially Integrative Behavior in Teachers' Contacts with Children," op. cit., pp. 73-89.

[2] R. Lippitt, and R. K. White, "The Social Climate of Children's Groups," Child Behavior and Development, R.G. Barker, J.S.Kounin, and H.F. Wright, editors (New York: McGraw-Hill Book Co., 1943).

The pattern Lippitt and White named "authoritarian leadership" was similar to indirect contacts; while "laissez-faire leadership" consisted of irregular and infrequent interactive contacts with a lack of adult initiative that is seldom found in a classroom and was not present in the Anderson studies.

Most of the conclusions of the Lippitt and White study confirm or extend the general conclusions of Anderson, Brewer and Reed.[1] From the point of view of classroom teaching, one interesting extension was the conceptualization of "dependence on the leader" by Lippitt and White.[2] This is a state of affairs in which group members were unable to proceed without directions from the leader.

Anderson, Brewer and Reed used the category "conforming to teacher domination" and thus noted similar events, but in the more closely controlled situations in the laboratory experiments, it was clearly seen that extensive compliance occurs when a generalized condition of dependence is established.[3]

The Anderson, Brewer and Reed studies and the Lippitt and White studies aroused considerable interest in the analysis

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[1] H.H.Anderson, J.E.Brewer, and M.F.Reed, op. cit..

[2] R. Lippitt and R.K.White, "The Social Climate of Children's Groups," Child Behavior and Development, R.G. Barker, J.S.Kounin and H.F.Wright, editors (New York: McGraw-Hill Book Co., 1943).

[3] E. J. Amidon and Ned A. Flanders, op. cit., p. 75.

of teacher behavior. Additional research revealed minor variations of the central theme they had established. Withall[1] showed that a simple classification of the teacher's verbal statements into seven categories produced an index of teacher behavior almost identical to the integrative-dominative (indirect/direct) ratio of Anderson, Brewer, and Reed.[2]

Flanders created laboratory situations in which one pupil at a time was exposed to contrasting patterns of teacher behavior.[3] A sustained direct pattern was consistently disliked by pupils, reduced their ability to recall the material studied, and produced disruptive anxiety as indicated by galvanic skin responses and changes in heartbeat rates. The opposite trends were noted in pupil reactions to indirect contacts.

Perkins, using Withall's technique, studies groups of teachers organized to discuss the topic of child growth and development.[4] He found that greater learning about child growth and development occurred when group discussion was free to focus on that topic. Groups with an indirect type

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[1] J. Withall, "The Development of a Technique for the Measurement of Social-Emotional Climate in Classrooms," Journal of Experimental Education, XVII (1949), 347-361.

[2] H. H. Anderson, J. E. Brewer, and M. F. Reed, op. cit..

[3] N. A. Flanders, "Personal-Social Anxiety as a Factor in Experimental Learning Situations," Journal of Educational Research, XLV (1951) 100-110.

[4] H. V. Perkins, "Climate Influences Group Learning," Journal of Educational Research, XLV (1951), 115-119.

of leader were able to do this more frequently than were groups led by the direct type of leader.

In a large cross-sectional study, which did not use observation of spontaneous teacher behavior, Cogan administered a single paper and pencil instrument to 987 eighth-grade students in 33 classrooms.[1] The instruments contained three scales: (a) a scale assessing student perceptions of the teacher; (b) a scale on which students reported how often they did required schoolwork; and (c) a scale on which students reported how often they did extra non-required school work. Cogan's first scale assessed traits that he developed in terms of Murray's list of major personality needs. There were two patterns in this scale. The items of one pattern were grouped as "dominative," "agressive", and "rejectant." The second pattern was "integrative," "affiliative," and "nurturant". These are close to Anderson's dominative (direct) and integrative (indirect) patterns.[2] Cogan found that students reported doing more assigned and extra school work when they perceived the teacher's behavior as falling into the indirect pattern rather than the direct pattern.

Two important questions are left unanswered by the studies just reviewed. First, since both indirect and direct types of statements are used by all teachers,

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[1]M. L. Cogan, "Theory and Design of Teacher-Pupil Interaction," The Harvard Educational Review, XXVI (1956), 315-342.

[2]H. H. Anderson, "The Measurement of Domination and of Socially Integrative Behavior in Teachers' Contacts with Children," op. cit., pp. 73-89.

including the most excellent teachers, what are the consequences of these different types of statements used under different conditions? This question introduces the idea of flexibility of teacher behavior--that a teacher may need to vary his behavior under different conditions in order to achieve the desired consequences.

It points to the need for a dynamic theory of teacher influence that describes the effects of different patterns. Second, what is a typical balance of indirect and direct acts found in classrooms? The question stems from the observation that in Anderson's work teachers classified as indirect and direct differed from one another only in degree.[1] Anderson and his co-workers present data for all their teachers, but the number of teachers observed is so few that no standardized norms could be established. The need for standardized norms of teacher behavior, established with a single observation system, remains.

One earlier research project does supply evidence that teachers are flexible in their use of indirect and direct contacts. Mitzel and Rabinowitz observed four teachers using Withall's technique and organized their data to permit an analysis of variation among teachers, visits, and observers.[2] Since the median length of an observer's

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[1] H. H. Anderson, "The Measurement of Domination and of Socially Integrative Behavior in Teachers," op. cit..

[2] H. E. Mitzel and W. Rabinowitz, Assessing Social-Emotional Climate in the Classroom by Withall's Technique, Psychological Monographs, No. 368, 1953.

visit was of the order of twenty minutes, the finding of statistically significant, wide variability of the indirect-direct balance among visits for the same teacher suggests that teachers adapt their influence to the immediate situation.[1]

Recent Research on Teacher Influence

Teacher Influence and Pupil Outcomes

Since the early study by Flanders a number of other studies have investigated the relationship of patterns of teacher influence to pupil achievement. Although results of the more recent research, which parallels the Flanders study, are consistent with the initial findings, other subject matter areas and grade levels have now been studied and the results are worth mentioning.

In a study carried out at the elementary school level, Nelson found that indirect teacher influence was positively related to pupil achievement on written language tests.[2] She also found that direct teacher influence patterns appeared to inhibit pupils' development of written language skills.

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[1] E. J. Amidon and Ned A. Flanders, op. cit..

[2] Lois Nelson, "Teacher Leadership: An Empirical Approach to Analyzing Teacher Behavior in the Classroom," Classroom Interaction Newsletter, II (November, 1966), 31-32.

La Shier obtained similar results when working with student teachers who were teaching a six-week unit in biological science.[1] La Shier found that pupils of indirect student teachers achieved more than pupils of direct student teachers. In his study, the indirect student teachers used four times as much acceptance of feeling and twice as much praise following student-initiated ideas as did the direct student teachers.

Two of the more significant studies in this series were completed at Temple University in Spring,1966--one by Furst and the other by Soar. Furst was perhaps the first person to attempt the replication of a study by re-analyzing a set of audio tapes that had been analyzed earlier in a study using another observational system.[2] For her study, Soar used the audio tapes from Bellack's cognitive study of the classroom, analyzing them in terms of the interaction analysis categories.[3] Using interaction analysis, she identified certain relationships between teacher influence patterns and student achievement. Furst found that above average student achievement was positively related to indirect

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[1]W. S. La Shier, Jr. "The Use of Interaction Analysis in BSCS Laboratory Block Classrooms," Paper read at the National Science Teachers Association Meetings, New York City, April 3, 1966.

[2]Norma Furst, "The Effects of Training in Interaction Analysis on the Behavior of Student Teachers in Secondary Schools," Paper read at the American Educational Research Association meetings, Chicago, February, 1965.

[3]R. Soar, An Integrative Approach to Classroom Learning, Public Health Service, Final Report No.7-R11 MHO 2045 (Philadelphia: Temple University, 1966).

teacher influence, moderate pace of teacher-pupil interaction, and an indirect teacher response to student talk. She also found that the amount of student talk was positively related to student achievement.

Soar, in one of the largest studies yet conducted on interaction analysis found that indirect teaching produced greater growth in reading comprehension in elementary school pupils than direct teaching.[1] She found that children who had been in classes taught by indirect teachers also advanced an average of five and one half months in reading comprehension during the summer vacation, while children who had been in direct teachers' classes advanced three months in the same period. These results seem to indicate that the influence of the teacher on learning persists even after the formal classroom experience is completed.

Weber, in a study that investigated pupils' creativity levels after a three-year experience with an indirect or a direct teacher, found that indirect teaching produced higher pupil creativity scores than direct teaching.[2] This study was conducted in a unique situation in which children spent the first, second and third grades with the same teacher.

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[1] R. Soar, op. cit..

[2] W. A. Weber, "Teacher and Pupil Creativity," Unpublished doctoral thesis, Temple University, Philadelphia, 1967.

The Torrance creativity tests were used to measure the children's growth in creativity.

In an early laboratory study, Schantz found that elementary school pupils of high ability who were exposed to indirect teaching scored significantly higher on science achievement tests than did those exposed to direct teacher influence.[1] In a group of students with lower abilities the results were not so clear cut.

Using a design similar to Weber's, Powell found that children who had an indirect teacher scored significantly higher in arithmetic achievement tests than children who had a direct teacher for the same period of time.[2]

Descriptive Studies

In the past few years a number of studies have attempted to identify patterns of interaction in elementary and secondary classrooms. In one such study, Furst and Amidon observed twenty-five elementary school teachers in three subjects--reading, arithmetic, and social studies.[3]

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[1]Betty Schantz, "An Experimental Study Comparing the Effects of Recall by Children in Direct and Indirect Teaching Methods as a Tool of Measurement," Unpublished doctoral thesis, Pennsylvania State University, State College, 1963.

[2]E. R. Powell, "Some Relationships between Classroom Process and Pupil Achievement in the Elementary School," Unpublished doctoral thesis, Temple University, 1968.

[3]Norma Furst and E. J. Amidon, "Teacher-Pupil Interaction Patterns in the Elementary School." Paper read at Schoolmen's Week, University of Pennsylvania, Philadelphia, 1962.

They found that in over-all teaching style first- and second-grade teachers tended to be the most indirect, while third- and fourth-grade teachers were most direct. When lecture and questions were not included in determination of the indirect/direct ratio, however, fifth- and sixth-grade teachers were the most indirect.

Giammatteo analyzed the interaction patterns of a number of elementary school teachers in language arts lessons.[1] The results tended to support those of Furst and Amidon in that the third- and fourth-grade teachers tended to be the most direct, while the lower- and upper-grade teachers were more indirect. Giammatteo, like Furst and Amidon, found that upper-grade teachers were the most accepting of student ideas and that primary-grade teachers gave the most directions. Giammatteo found also that teachers of children in lower socio-economic groups were more indirect than those teaching children in higher socio-economic groups.

Amidon and Giammatteo found that the teaching patterns of twenty-three elementary school teachers judged as "superior" by their supervisors were considerably different from the teaching patterns of one hundred twenty teachers

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[1]M. C. Giammatteo, "Interaction Patterns of Elementary Teachers, Using Minnesota Categories of Interaction Analysis," unpublished doctoral thesis, University of Pittsburgh, Pittsburgh, 1963.

rated as average.[1] The superior teachers talked a smaller percentage of the total class time, accepted and encouraged student-initiated ideas more, and made a greater effort to build upon student ideas than did the average teachers. The superior teachers dominated their classrooms less, used indirect verbal behavior more, and used direction giving and criticism less than the normative groups of teachers; they asked questions that were broader in nature than did the normative groups and had more student questions and student participation.

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[1] E. J. Amidon and M. C. Giammatteo, "The Behavior of Superior Teachers," The Elementary School Journal, LXV, (February, 1965), 283-285.

CHAPTER III

VERBAL INTERACTION IN THE CLASSROOM

An Analysis of Verbal Interaction Patterns

The social forces at work in the classroom are so complex that it looks on the surface as if any attempt to analyze them would be extremely difficult. The teacher's interaction with students, which is a portion of the total social process, seems almost as difficult to identify. Nevertheless, teacher-pupil contacts have been classified into specifically defined behavioral acts by various researchers who have studied teacher behavior.

The Flanders system, which is the system of interaction analysis described herein, is concerned with verbal behavior only, primarily because it can be observed with higher reliability than can non-verbal behavior. The assumption is made that the verbal behavior of an individual is an adequate sample of his total behavior.[1]

Among the most important verbal skills needed by the teacher are the following: (1) ability to accept, clarify,

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[1] E. J. Amidon and Ned A. Flanders, op. cit., p. 6.

and use ideas, (2) ability to accept and clarify emotional expression, (3) ability to relate emotional expression to ideas, (4) ability to state objectively a point of view, (5) ability to reflect accurately the ideas of others, (6) ability to summarize ideas presented in group discussion, (7) ability to communicate encouragement, (8) ability to question others without causing defensive behavior, and (9) ability to use criticism with the least possible harm to the status of the recipient.[1]

Description of Categories

In the Flanders system of interaction analysis observation, all teacher statements are classified first as either indirect or direct. This classification gives central attention to the amount of freedom the teacher grants to the student. In a given situation, therefore, a teacher has a choice. His choice, conscious or unconscious, depends upon many factors, among which are his perceptions of the classroom interaction and the goals of the particular learning situation.

All statements that occur in the classroom then are categorized in one of three major sections: (1) teacher talk, (2) student talk, and a separate category, (3) silence, confusion, or anything other than teacher or student talk.

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[1]E. J. Amidon and Ned A. Flanders, op. cit., p. 3.

The larger sections of teacher and student verbal behavior are subdivided in order to make the total pattern of teacher-pupil interaction more meaningful. The two subdivisions for teacher verbal behavior, indirect and direct teacher talk, are further divided into smaller categories. Indirect influence consists of four observation categories: (1) accepting feeling, (2) praising or encouraging, (3) accepting ideas, and (4) asking questions. Direct influence is divided into three categories: (5) lecturing, (6) giving directions, and (7) criticizing or justifying authority. Student talk is divided into only two categories: (8) responding to teacher, and (9) initiating talk. All categories are mutually exclusive; yet together they are totally inclusive of all verbal interaction occurring in the classroom.

Indirect Teacher Behavior

Category 1, Acceptance of Feeling. The teacher accepts feelings when he says he understands how the pupils feel, that they have the right to have these feelings, and that he will not punish the pupils for their feelings. These kinds of statements often communicate to pupils both acceptance and clarification of their feeling.

In our society, people often react to expressions of negative feelings by offering negative feelings in return. Acceptance of these emotions in the classroom is quite rare, probably because teachers find it difficult to accept negative emotional behavior. However, it may be just as difficult

for them to accept positive feelings. Feelings expressed by students may also be ignored by the teacher if he considers the classroom to be a place where people are concerned primarily with ideas rather than feelings.

Category 2, Praise or Encouragement. Included in this category are jokes that release tension, but not those that threaten students, or are made at the expense of individual students. Often praise is a single word: "Good", "Fine", or "Right". Encouragement is slightly different and includes such statements as: "Continue", "Go ahead with what you are saying", "Tell us more about your ideas". Praise may also be given in the form of repetition of a student's answer when this repetition communicates to the student the message that his answer is correct.

Category 3, Accepting Ideas. This category is quite similar to Category One; however, it includes only acceptance of student's ideas, not acceptance of expressed emotion. When a student makes a suggestion the teacher may paraphrase the student's statement, restate the ideas more simply, or summarize what the student has said. The teacher may also say: "Well, that's an interesting point of view. I see what you mean." Statements belonging in Category Three are particularly difficult to recognize; often the teacher will shift from using the student's idea to stating the teacher's own idea. When a teacher repeats a student's idea, indicating tha the student's idea is one that should be considered, the

statement belongs in Category Three. If the teacher responds by stating his own idea, another category must be used.

Category 4, Asking Questions. This category includes only questions to which the teacher expects an answer from the pupils. If a teacher asks a question and then follows it immediately with a statement of opinion, or if he begins lecturing, obviously the question was not meant to be answered. A rhetorical question is not categorized as a question.

Questions that are meant to be answered are of several kinds. There are questions that are direct in the sense that there is a right or wrong answer. The question "What are two and two?" is one that limits the freedom of the student to some extent. In general, this kind of question focuses the student's answer more than does a question such as "What do you think we ought to do now?"

Questions, then, can be either narrow and restrict the student in his answer, or they can be very broad and give the student a great deal of freedom in answering. All questions, however broad or narrow, which require answers, and are not commands or criticism, fall into Category Four.

Direct Teacher Behavior

Category 5, Lecture. Lecture is the form of verbal behavior used to give information, facts, opinions, ideas or orientation to students. The presentation of material may

be used to introduce, review, or focus the attention of the class on an important topic. Usually information in the form of lecture is given in fairly extended time periods, but it may be interspersed with student's comments and questions, and encouraging praise given by the teacher.

Whenever the teacher is explaining, discussing, giving opinions, or giving facts or information, Category Five is used. When the teacher is orienting a class to a topic or explaining the procedure that the class will follow, this is also classified in Category Five. Rhetorical questions are also included in this category. Category Five is the one most frequently used in classroom observation.

Category 6, Giving Directions. The decision about whether or not to classify the statement as a direction or command must be based on the degree of freedom that the student has in response to teacher direction. When the teacher says: "Will all of you stand up and stretch?" he is obviously giving a direction. If he says, "John, go to the board and write your name." he is giving a direction or command. When he says: "John, I want you to tell me what you have done with your reader." he is still giving a direction. This category is used only when the student's compliance would take the form of an observable act.

Category 7, Criticizing or Justifying Authority. A statement of criticism is one that is designed to change student behavior from non-acceptable to acceptable. The teacher is saying, in effect: "I don't like what you are

doing. Do something else." Another group of statements included in this category are those that might be called statements of defense or self-justification. These statements are particularly difficult to detect when a teacher appears to be explaining a lesson to the class. If the teacher is explaining himself or his authority, defending himself against the student, or justifying himself, the statement falls in this category. Other kinds of statements that fall in this category are those of extreme self-reference or those in which the teacher is constantly asking the students to do something as a special favor to the teacher.

Categories One through Four, those of indirect teacher influence and Categories Five through Seven, those of direct teacher influence have been described. They are all categories of teacher talk. Whenever the teacher is talking, the statements must be categorized in one of the first seven categories. If the observer decides that with a given statement, the teacher is restricting the freedom of the students, the statement is tallied in Categories Five, Six or Seven. If, on the other hand, the observer decides that the teacher is expanding freedom of students, the category used is either One, Two, Three, or Four.

There are three additional categories for use in classroom interaction:

Category 8, Student Talk-Response. This category is used when the teacher has initiated the contact or has

solicited student statements, when the student answers a narrow question asked by the teacher, or when he responds verbally to a direction the teacher has given. Anything that the student says that is clearly in response to initiation by the teacher belongs in Category Eight.

Category 9, Student Talk-Initiation. In general, if the student raises his hand to make a statement or to ask a question when he has not been prompted to do so by the teacher, the appropriate category is then nine.

Distinguishing between Categories Eight and Nine is often difficult. Predicting the general kind of answer that the student will give in response to a question from the teacher is important in making this distinction. If the answer is one that is of a type predicted by the observer (as well as the teacher and class), then the statement comes under Category Eight. When in response to a teacher-question the student gives an answer different from that which is expected for that particular question, then the statement is categorized as a nine. Statements in response to broad teacher questions, which give the student an opportunity to express his own opinion or his own ideas on the topic, are classified as nines. In general, a broad teacher question is a clue that the answer is a nine.

Category 10, Silence or Confusion. This category includes anything not included in the other categories. Periods of confusion in communication, when it is difficult to determine who is talking, are classified in this category.

A summary of these categories, with brief definitions for use of the observer follows on page 32.[1]

Using and Interpreting Interaction Analysis

When categorizing teacher or student statements, it is necessary that the sequence of events in a classroom be preserved for analysis. It is not enough to say that a teacher uses lecture fifty per cent of the time or that he criticizes five per cent of the time. When does he use this lecture or this criticism? With what other kinds of statements are they combined?[2]

Recording Data in a Matrix

There is a method of recording the sequence of events in the classroom in such a way that certain facts become readily apparent. This method consists of entering the sequence of numbers into a 10 - row by 10 - column table, which is called a matrix. (Appendix I, Table 1, page 55.) The generalized sequence of the teacher-pupil interaction can be examined readily in this matrix. The following example shows how an observer would classify what happens in a classroom and how the observations are recorded in the matrix. The example is a fifth-grade teacher who is beginning a social

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[1] E. J. Amidon and Ned A. Flanders, op. cit., pp. 6-13.

[2] Ibid., p. 31.

SUMMARY OF

CATEGORIES FOR INTERACTION ANALYSIS

TEACHER TALK	INDIRECT INFLUENCE	1. * ACCEPTS FEELING: accepts and clarifies the feeling tone of the students in a nonthreatening manner. Feelings may be positive or negative. Predicting or recalling feelings is included. 2. * PRAISES OR ENCOURAGES: praises or encourages student action or behavior. Jokes that release tension, but not at the expense of another individual; nodding head, or saying "um hm?" or "go on" are included. 3. * ACCEPTS OR USES IDEAS OF STUDENTS: clarifying, building, or developing ideas suggested by a student. As teacher brings more of his own ideas into play, shift to Category 5. 4. * ASKS QUESTIONS: asking a question about content or procedure with the intent that a student answer.
	DIRECT INFLUENCE	5. * LECTURING: giving facts or opinions about content or procedures; expressing his own ideas, asking rhetorical questions. 6. * GIVING DIRECTIONS: directions, commands, or orders with which a student is expected to comply. 7. * CRITICIZING OR JUSTIFYING AUTHORITY: statements intended to change student behavior from nonacceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.
STUDENT TALK		8. * STUDENT TALK - RESPONSE: talk by students in response to teacher. Teacher initiates the contact or solicits student statement. 9. * STUDENT TALK - INITIATION: talk by students, which they initiate. If "calling on" student is only to indicate who may talk next, observer must decide whether student wanted to talk. If he did, use this category.
		10. * SILENCE OR CONFUSION: pauses, short periods of silence, and periods of confusion in which communication cannot be understood by the observer.

* There is NO scale implied by these numbers. Each number is classificatory; it designates a particular kind of communication event. To write these numbers down during observation is to enumerate--not to judge a position on a scale.

studies lesson. The observer has been sitting in the classroom for several minutes, and has begun to get some idea of the general climate before he begins to record. The teacher says to the class: "Boys and girls, please open your social studies books to Page 5." (Observer classified this as a 6, followed by a 10 because of the period of silence and confusion as the pupils try to find the page.) The teacher says, "Jimmy, we are all waiting for you. Will you please turn your book to Page 5?" (Observer records a 7 and a 6.) "I know now," continues the teacher, "that some of us had a little difficulty with, and were a little disturbed by, the study of this chapter yesterday; I think that today we are going to find it more exciting and interesting." (Observer records two 1's, reacting to feeling.) "Now, has anyone had a chance to think about what we discussed yesterday?" (Observer records a 4 for a question.) A student answers, "I thought about it, and it seems to me that the reason we are in so much trouble in Southeast Asia is that we haven't really had a chance to learn to understand the ways of the people who live there." (Observer records three 9's.)

The teacher responds by saying, "Good, I am glad that you suggested that, John. Now let me see if I understand your idea completely. You have suggested that if we had known the people better in Southeast Asia, we might not be in the trouble we are in today." (This is classified as a 2, followed by two 3's.)

The observer has now classified the following sequence of numbers in this fashion:

	10) 1st pair	
2nd pair	(6	
	10) 3rd pair	
4th pair	(7	(The use of a 10 at the beginning and end of the sequence is explained in the discussion that follows.)
	6	
	1	
	1	
	4	
	9	
	9	
	9	
	2	
	3	
	3	
	10	

Tabulations are now made in the matrix to represent pairs of numbers. Notice in the listing above that the numbers have been marked off in pairs. The first pair is 10 - 6, the second pair is 6 - 10, etc. The particular cell in which tabulation of the pair of numbers is made is determined by using the first number in the pair to indicate the row and the second number in the pair for the column. Thus, 10 - 6 would be shown by a tally in the cell formed by Row 10 and Column 6. The second pair, 6 - 10, would be shown in the cell formed by Row 6 and Column 10. The third pair, 10 - 7, is entered into the cell, Row 10 and Column 7. Notice that each pair of numbers overlaps with the previous pair, and each number except the first and the last, is used twice. It is for this reason that a 10 is entered as the first number and the last number in the record. This number is chosen as it is convenient to assume that each record began and ended with silence. This

procedure also permits the total of each column to equal the total of the corresponding row.

It is convenient to check the tabulations in the matrix for accuracy by noting that there should be one less tally in the matrix than there were numbers entered in the original observation record (N - 1).

In this case, we started with 15 numbers and the total number of tallies in the matrix is 14. This tabulation is shown in Table I. (Appendix I, Table I, page

Oridinarily a separate matrix is made for each specific lesson or major activity. If the observer is categorizing forty minutes of arithmetic and twenty minutes of social studies, he makes one matrix for the arithmetic and another for the social studies lesson. If a secondary teacher has a thirty-minute discussion period, followed by a twenty-minute period of more structured lecture in another area, then the observer usually makes two separate matrices. Matrices are more meaningful when they represent a single type of activity or work.

Using the Matrix to Determine General Aspects of Classroom Interaction

After the observer tabulates a matrix, he then has the job of developing a description of the classroom interaction. He has several ways of describing the interaction, but begins by reporting the different kinds of statements in terms of percentages. The first step is computing the percentage of tallies in each of the columns. This is done

by dividing each of the column totals, 1 through 10, by the total number of tallies in the matrix. This computation gives the proportion of the total interaction in the observed classroom situation found in each category. A similar procedure is used to determine the percentage of total teacher talk that falls in each category. This is done by dividing the total of each category, 1 through 7, by the sum of these seven categories. For example, in Table II the teacher had 105 tallies in Columns 1-7. If 10 of these tallies are in Column 3, then 10 is divided by 105 and we find that the amount of teacher talk that falls into Category Three is approximately $9\frac{1}{2}$ percent of the total amount of teacher talk. The pattern of interaction that the teacher has used with the class is now evident. (Appendix I, Table II, page 56.)

The total percentage of teacher talk that is of prime importance in interpreting the matrix is formed by dividing the total number of tallies in Columns 1 through 7 by the total number of tallies in the matrix. There are 150 tallies in the matrix, 105 of which are Columns 1-7. This teacher talked 70 per cent of the total time of observation. To find the percent of student talk, the total number of tallies in Columns 8 and 9 is divided by the total number of tallies in the matrix. Assuming that Columns 8 and 9 contained 42 tallies, the students talked 28 per cent of the time. A total of three tallies in Column 10, when divided

by 150, shows that 2 percent of the time was spent in silence or confusion.

Next the observer focuses on the relative number of indirect and direct teacher statements. The total number of tallies in Columns 1, 2, 3, and 4 is divided by the total number of tallies in Columns 5, 6, and 7, plus the total in Columns 1, 2, 3, and 4, to find the I/D ratio, or the ratio of indirect to direct teacher statements. An I/D ratio of .5 means that for every indirect statement there was one direct statement; and an I/D ratio of .67 means that for every two indirect statements there was only one direct statement, etc.

A revised I/D ratio is employed in order to find out the kind of emphasis given to motivation and control in a particular classroom. The number of tallies in Columns 1, 2, and 3 is divided by the number of tallies in Columns 1, 2, and 3 plus those in 6 and 7, to find this revised ratio. Categories One, Two, Three, Six, and Seven are more concerned with motivation and control in the classroom and less concerned with actual presentation of subject matter. This ratio eliminated the effects of Categories Four and Five, lecture and asking questions, and gives information about whether the teacher is direct or indirect in his approach to motivation and control.

Using the Matrix to Determine Specific Areas of Classroom Interaction

The matrix provides the observer with a convenient device for analyzing the summarized teacher-pupil interaction data. By studying the matrix the observer will be able to identify those cells in which he has heavy build ups of tallies, as well as the cells in which there are no tallies.

Tables III through IX describe the interaction more specifically in terms of certain areas of the matrix. Table III indicates the area called the 'content cross', because tallies in this area represent teacher statements consisting primarily of lecture, statements of opinion, ideas and information; and teacher questions about information and content that he has presented. A heavy concentration of tallies in this area indicates an emphasis on the content.[1] (Appendix I, Tables III through IX pages 57 - 62.)

Interpreting Matrix Data

In developing an intensive description about a particular matrix, it is well to remember that only the individual teacher can make the final decisions about what behavior is "good" or "bad", "undesirable" or "desirable." Certain predictions, however, can be made about effects of certain kinds of combinations of behavior in the classroom. In this

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[1] E. J. Amidon and Ned A. Flanders, op. cit., pp. 31-38.

section the matrix will be systematically expanded in order to discuss consequences that can be expected for particular kinds of cell totals and cell build-ups.

Interpretations in this section are made on the basis of analysis of matrices that were built in the early research programs conducted at the University of Minnesota and in more recent research conducted at Temple University.

Teachers referred to here as "direct" are those who were identified in the research and in the laboratory as using considerably more than the average amount of direct influence. The "indirect" teachers are those who used much more than the average amount of indirect influence. The average percentages given are based on matrices of junior high school teachers because this is the only level at which large numbers of teachers have been observed. Subsequent examination of matrices of elementary teachers and high school teachers have revealed no major differences between those teachers and teachers at the junior high school levels. AVERAGE PERCENTAGES REFLECT CURRENT PRACTICE, NOT THE BEST OR MOST DESIRED PRACTICES. For example, a naturally indirect teacher with special training is likely to become even more indirect than is indicated in the paragraphs that follow.

Statements belonging in Category One, acceptance of feeling, are used very rarely in any teaching style. The average time teachers spend in making such statements appears

to be less than .5 per cent of the total classroom time. Little difference in the use of Category One is found between direct and indirect teachers. Indirect teachers may use up to .5 per cent, while direct teachers usually use less than .1 per cent. Not much use, then is made of clarifying emotions of students in the classroom. This category is maintained because of the significance of such behavior when it does occur.

Direct and indirect teachers seem to use practically the same number of statements fitting into Category Two, praise or encouragement. The average amount of praise used is about 2 per cent of the total time of the classroom interaction. It is somewhat surprising to many teachers to learn that the direct teacher uses as much praise as the indirect teacher. However, the 2 - 2 cell, which shows extended praise, is particularly significant. It is used almost twice as much by the indirect as by the direct teacher. (Appendix I, Table IV, page 58; Table IX, page 62; Appendix text, pages 57 and 62.)

The greatest difference between teachers who are identified in research as direct and those who are indirect is in their use of Category Three acceptance or clarification of ideas. Only about 2 per cent of the tallies of direct teachers fall in Category Three but about 9 per cent of indirect teacher statements fall in this category. Although

some differences can be accounted for by subject matter area, fewer differences seem to be due to subject matter areas than to type of teacher. Teachers who use the 3 - 3 cell are not only accepting and using student ideas, but are also enlarging upon these ideas by using them to show pupils the relationships between their own ideas and the content in the classroom. The use of Category Three, accepts ideas of student, particularly the further extension of student ideas, which is shown in the 3 - 3 cell, often distinguishes between two types of teachers--the one who is alert to and utilizing the relationship between a student's idea (whether right or wrong) and classroom content, and the teacher who is apparently unaware of or does not care to utilize this relationship.

Category 4 and Category 5. Although, Category four, asks questions, indicates indirect influence, and Category Five, lectures, indicates direct influence; we will discuss them together since they seem to be closely related in their use in the classroom. The percentage of teacher talk that is questioning, falling in Category Four, usually varies from 8 per cent to 50 per cent of the total verbal behavior of teachers. There seems to be very little difference between direct and indirect teachers in the use of Categories Four and Five. Questions appear to constitute about 8 per cent of the interaction for direct teachers and 11 per cent

of the pattern for indirect teachers. No consistent differences appear to exist between the direct and indirect teachers in the amount of lecture, Category Five, used in the classroom.

In their use of Category Six, gives directions, direct and indirect teachers are often found to differ significantly, with the direct teacher using about 8 per cent and the indirect teacher only 4 per cent of the total interaction time in giving directions.

A look at Category Seven, criticizes or justifies authority, too, helps in discriminating between direct and indirect teachers because the two types differ in the amount of time they spend in criticism and self-justification. The direct teacher employs criticism about 5 per cent of the time, and the indirect teacher less than 1 per cent of the time. Nor do the two kinds of teachers use Category Seven, criticizes or justifies authority, statements in the same way. Most of the criticism used by the direct teacher is extended criticism, which shows up in cell 7 - 7. (Appendix II, Table V, page 73.) The direct teacher also uses criticism after lecture, direction, and student talk. This use of criticism shows up in the 5 - 7, 6 - 7, 8 - 7, and 9 - 7 cells.

The indirect teacher, who rarely uses the 6 - 7 and 7 - 6 cells, tends to distribute his use of criticism more evenly among the other cells of the matrix than does the direct teacher.

The significant difference between the direct and indirect teacher in relation to Category Eight, student talk-response, is not in the amount of student talk it represents but rather in the way in which the teachers induce pupil participation. In the matrix of the direct teacher about 50 per cent of Category Eight, student talk-response, tallies occur in the 4 - 8 cell, which contains answers to teacher questions. In the matrix of the indirect teacher the total in the 4 - 8 cell is closer to 30 per cent. A larger percentage of student talk in the 8 - 8 cell occurs in the matrix of the indirect teacher than in that of the direct teacher.

The differences are also significant in Category Nine. Although there is very little difference in total percentages of Category Nine statements appearing in matrices of direct and indirect teachers, sustained student talk, shown in the 9 - 9 cell, occurs frequently in the matrix of the indirect teacher and infrequently in the matrix of the direct teacher. Students in the classroom of the indirect teacher, according to this information, express themselves more freely.

Category Ten, which shows the total amount of silence or confusion in the classroom, is more heavily loaded in the matrix of the direct than in that of the indirect teacher.

Other Facts Revealed in the Matrix

A careful examination of Columns Four and Five and Rows 4 and 5 (Appendix II, Table III page 69.) will enable the observer to identify for study several cells that are important primarily because of the function of Categories Four, asks questions, and Five, lectures, in the presentation of subject matter. Variation in the amount of time spent in Categories Four and Five is due largely to the subject area that is taught. This seems to be more true in the case of these categories than in the case of any other category or pair of categories. The teacher who is teaching mathematics, science, or another relatively structured subject lectures, Category Five, more than he questions, Category Four, pupils. The social studies teacher uses more questions and less lecture. The common pattern in an arithmetic or mathematics class is for the teacher to use lecture 50 per cent of the time and questions between 5 per cent and 10 per cent of the time. In a social studies class the teacher is likely to lecture about 30 per cent of the time and use 10 per cent to 15 per cent of the time for questions.

When a teacher uses extensive lecture, is he taking time to find out whether or not he is communicating as he wants to communicate with the class? A question-answer pattern, or a pattern of questions and clarification by the teacher of student ideas, may indicate that the teacher is taking time to relate the responses of children to the

material or to determine how effectively he is communicating his ideas. Conversely, a pattern of extended lecture with few questions, or one of only direct questions with specific answers required, may indicate limited attempts on the part of the teacher to find out how well he is communicating or to find out whether or not there is a clear relationship between student ideas and the content being discussed.

The kind of question and answer pattern that is in use is indicated by examining Rows 4 and 8 and Columns 4 and 8. Note first the 4 - 8 cell that contains tallies indicating teacher questions followed immediately by student response. A heavily loaded 4 - 8 cell indicates that the teacher has asked many direct questions; that is, questions that limit the range of a student response. If the 8 - 4 cell is also heavily loaded, with few tallies appearing in other Row 8 cells, then it is probable that the teacher is following the student's answer to one question with another question.

The use of a modified question-answer pattern can be shown by heavy build-ups in the 4 - 8, 8 - 2, 2 - 4, and 3 - 4 cells. This pattern is indicative of a teacher who asks a question and then encourages or accepts student ideas before asking a second question.

Still another modified question-answer pattern centers around the 4 - 10 cell. Frequent use of this 4 - 10 combination reflects periods of silence following teacher questions. What follows this silence that occurs after the

teacher question? When verbal action that follows is student response, indicated by heavily loaded 10 - 8 or 10 - 9 cells, then the teacher has perhaps asked thought-provoking questions and allowed time for pupils to think before answering. If, however, there is heavy loading in the 10 - 4 cell rather than in the 10 - 9 and 10 - 8 cells, then the teacher has either restated his original question or phrased a new one before allowing students to answer.

A teacher using a pattern in which the 4 - 5 and 4 - 6 cells are heavily loaded may not be allowing pupils to answer questions he has asked. Either he is directing them to answer, or he is extending lecture after his questions, perhaps to explain them further.

Frequent use of the 5 - 4 cell means that the teacher is interspersing questions throughout his lecturing. When the 5 - 4 cell is heavily loaded, it is probably important to check the 4 - 8 and 4 - 9 cells, as well as the 8 and 9 rows to find out more about how the teacher uses questions during the lecture.

Frequent use of the 5 - 7 cell, indicating lecture broken by criticism, suggests that the teacher is attempting to maintain order and control while he is lecturing.

Considerable use of the 5 - 5 cell with little use of other cells in the 5 row means that the teacher uses periods

of concentrated lecture unbroken by teacher questions or pupil contributions.[1]

Interaction Analysis and Behavior Change

Interaction analysis is a tool that, if properly employed, can be of great use to a teacher in improving his role in guiding his pupils' learning.

The interaction analysis system described herein can give the teacher a way of gathering objective data about his own behavior in the classroom. The extent to which he uses this data in understanding his own actions more fully and in planning changes in his own role will be up to him. The teacher will gain the greatest values as he finds it possible to put forth the time and effort involved.

If the teacher is to maximize understanding of his own role, he needs to accept the fact that in this matrix are recorded objective data about his behavior in the teaching situation. These data need not be 'explained'; the 'whys' or 'hows', the rationalizing, the defense, the intent have no place in matrix interpretation. The teacher may like what he sees or be puzzled or disturbed by it, but his chief job is to understand and to change it if he sees the need.[2]

> The majority of men are subjective towards themselves while being objective against all others, terribly

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[1] E. J. Amidon and Ned A. Flanders, op. cit., pp. 45-51.

[2] Ibid., p. 93.

objective sometimes--but the real task is exactly the opposite; to be objective towards oneself and subjective towards all others! We should not give in to our natural tendency to be severe towards others and lenient to ourselves, for we shall understand others only if we try to understand them from within by attempting to make their experiences our own.[1]

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[1]Kierkegaard, Journals (New York: Oxford University Press, 1938), p. 153.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Charisma in the Classroom

American education is being drastically overhauled to meet the needs of a new society. In the process we are turning our technological genius to the problems of schools and schooling as never before. Innovations in hardware and software, buildings, organization and methods are springing up all around us. But innovations alone are not enough. In all the confusion of probing education, pushing and pulling it into a more appropriate shape for our times, we must remind ourselves that education is a people business in which the goals we seek and the things we try must eventually be judged in terms of the persons in the process.[1]

We have been hearing much from the psychologists in recent years about the importance of the self concept. We know of the crucial role it plays in every aspect of human behavior. We know, for example, that it is a basic cause

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[1]Arthur W. Combs, Foreword, Humanizing Education: The Person in the Process (Washington, D.C.: Association for Supervision and Curriculum Development, N.E.A., 1967), p. 16.

of failure in all school subjects. It determines to a high degree whether a person will be well-adjusted or maladjusted; effective or ineffective in his dealings with life and it plays a primary role in the achievement of self actualization. It is even fundamental in the creating and growth of intelligence itself. With such new knowledge of the importance of the self-concept for human behavior, its exclusion from the classroom is simply unthinkable.

Students do not park their self-concepts at the door. They bring them right on into class with them. What we do with these students, regardless of the type of subject matter, is also teaching them who they are and what they are; for it is people we teach, not just subject matter. We are affecting people's concepts of themselves positively or negatively or not at all in every contact we have with them. Moreover, this happens whether we know it or not.

The laws of learning cannot be suspended because they are inconvenient for us. They go right on operating whether we are aware of them or not. If it is personal meaning which produces change in behavior, then it is the <u>selves</u> of our students with whom we must deal in our classrooms or pay the penalty of making our teaching ineffective.[1]

Teachers are in contact with pupil's constantly during the twelve years of public education. To whatever

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[1]Arthur W. Combs, <u>Humanizing Education</u>, p. 81.

extent these contacts are influenctial, it is in the classroom that patternss of thinking should be set, attitudes should be shaped and participation can influence the growth of independence and self-direction. Teaching behavior is the most potent, single, controllable factor that can alter learning opportunities in the classroom.[1]

The heart of the matter lies in what the teacher does that influences the educational development of his pupils. Of all teacher activities, the most salient are the direct person to person contacts, and the more indirect teacher to class contacts.[2]

Helping a person change his behavior in ways that improve the quality of classroom interaction is not easy, and much remains to be learned about the process. Classroom interaction analysis can provide reasonably objective information which can be helpful to the trainee who is trying to change his own behavior, or to the teacher in service who wishes to evaluate his own performance.[3]

Perhaps the most important research application of interaction analysis is to study teaching behavior and classroom interaction in an effort to develop theories of instruction. Given certain classroom settings and learning objectives, it would be reasonable to expect lawful relationships

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[1]Ned A. Flanders, Analyzing Teaching Behavior (Reading, Mass.: Addison-Wesley Publishing Company, 1970), p. 13.

[2]Ibid., p. 16.

[3]Ibid., p. 31.

between what the teacher does and the effects of his behavior on the learning of his pupils. It seems quite likely that an ideal, most effective teacher would adjust his own behavior to the learning situation of the moment. As the situation changes, we would expect changes in the teacher's behavior. Interaction analysis can be used to quantify the degree of flexible adaptation which is characteristic of a teacher's behavior and the nature of such adaptations. From information of this sort, theories of instruction may someday be generated.[1]

The Cultivation of Liberating Attitudes

Teaching and learning are inseparable. The teacher is in the classroom to make learning possible; his act is principally, then, an enabling act. Its first function is to free the student--from all that inhibits the student's own learning activity. This means removing the student's fears of authority, his fears of being ridiculed, his fears of the subject, his fears of failing. It means granting him the dignified status of student--someone capable of mastering the subject.[2]

It is most unfortunate that educators and the public think about and focus on teaching. If we focused on the

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[1] Ibid., p. 32.

[2] Raymond H. Ren[illegible], The Impact Teacher (St. Paul, Minn.: 3 M Education Press, Visual Products Division, 3 M Company, 3 M Center, 1967), p. 137.

facilitation of learning; how, why and when the student learns, we might be on a much more profitable track.

We have some knowledge, and could gain more about the conditions which facilitate learning and that one of the most important of these conditions is the attitudinal quality of the interpersonal relationship between facilitator and learner.

Those attitudes which appear effective in promoting learning can be described. The most important of these basic attitudes is a transparent realness in the facilitator, a willingness to be a person, to be and to live the feelings and thoughts of the moment.

When this realness includes a prizing, a caring, a trust and respect for the learner, the climate for learning is enhanced. When it includes a sensitive and emphatic listening, then indeed, a freeing climate, stimulative of self-initiated learning and growth exists.

Individuals who hold such attitudes, and are bold enough to act on them do not simply modify classroom methods--they revolutionize them. They are catalysts, facilitators, giving to students freedom, life and the opportunity to learn.[1]

---

[1]Carl R. Rogers, "The Interpersonal Relationship in the Facilitation of Learning," Humanizing Education: The Person in the Process (Washington, D.C.: Association for Supervision and Curriculum Development, N.E.A., 1967), p. 16.

APPENDIX I

TABLE I

Sample Interaction Matrix

Second

First

	1	2	3	4	5	6	7	8	9	10	
1	1			1							
2			1								
3			1							1	
4									1		
5											
6	1									1	
7						1					
8											
9		1							11		
10						1	1				Matrix Total
TOTAL	2	1	2	1	0	2	1	0	3	2	14
%											

TABLE II

A Typical Illustration

First \ Second	1	2	3	4	5	6	7	8	9	10	Matrix Total
1	1				1				1		
2		4	1					2			
3		1	6	1				2			
4			1	14				5			
5	1				48			6			
6						1		4			
7							4		1		
8		2	2	5	6	4		11			
9	1						1		9	1	
10									1	2	
TOTAL	3	7	10	20	55	5	5	30	12	3	150
%	2	4½	6½	13½	36½	3½	3½	20	8	2	

Teacher Talk

Columns 1-7 = 105

105 ÷ 150 = 70%

Student Talk

Columns 8-9 = 42

42 ÷ 150 = 28%

Indirect (1-4) ÷ Direct (1-4) plus (5-7) = I/D Ratio

$$\frac{40}{40 \text{ plus } 65} = \frac{40}{105} = .38$$

Indirect (1-3) ÷ Direct (1-3) plus (6-7) = Revised I/D Ratio

$$\frac{20}{20 \text{ plus } 10} = \frac{20}{30} = .67$$

TABLE III

The "Content Cross"

First \ Second	1	2	3	4	5	6	7	8	9	10	Matrix Total
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
TOTAL											
%											

Table IV represents the emphasis that the teacher gives to using student ideas, extending and amplifying student statements, and accepting and enlarging upon student feelings. It also includes stages of transition from one of these areas to the other. High frequency in the cells indicated in Table IV indicates the use of extended indirect influence by the teacher.

TABLE IV

Extended Indirect Influence

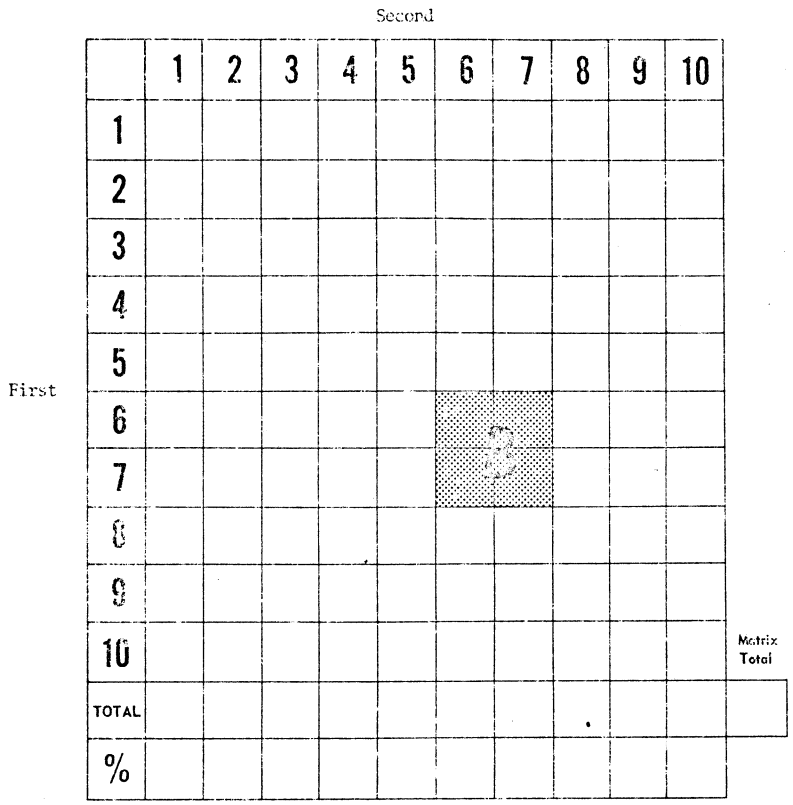
Second

First	1	2	3	4	5	6	7	8	9	10	
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											Matrix Total
TOTAL											
%											

Table V indicates the cells representing the teacher's emphasis on criticism, giving lengthy direction, or moving from one of these types of influence to the other. In general, tabulations in this area suggest extended direct influence on the part of the teacher and a heavy focus on the teacher's use of authority. One pattern often observed shows a teacher giving a direction that is not followed. Criticism ensues, and the teacher repeats the direction or gives a new direction. If it is not followed, the teacher again criticizes. This cycle of behavior shown in the pattern 6-6, 6-7, 7-6, 7-7, often indicates discipline problems or problems of student rejection of teacher influence. High frequencies in the 6-6 cell alone do not necessarily reflect on discipline.

TABLE V

Extended Direct Influence



An important aspect of the classroom is the way the teacher responds to student comment. Area A, Table VI, represents the indirect responses to student comment. Area B represents the direct response to student comment. A comparison of the relative number of tallies in these two areas indicates the pattern of behavior used by the teacher in response to students at the moment that a student stops talking.

TABLE VI

Teacher Response to Student Comments

First \ Second	1	2	3	4	5	6	7	8	9	10	
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											Matrix Total
TOTAL											
%											

Table VII refers to student talk. Examination of the tabulations that fall into Area A, Table VII, can indicate the kinds of teacher statements that tend to stimulate student talk. They help to answer the question "How do students in this classroom become involved in classroom interaction?" Area B, Table VII, represents student talk of two types: prolonged talk by one student and sustained talk by several students. In both cases the talk is not interrupted by teacher talk.

TABLE VII

Student Talk Following Teacher Talk

Second

First	1	2	3	4	5	6	7	8	9	10	
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											Matrix Total
TOTAL											
%											

Column 10, represented in Table VIII, shows particularly the kind of teacher or student talk that is followed by silence or confusion.

TABLE VIII

Silence or Confusion

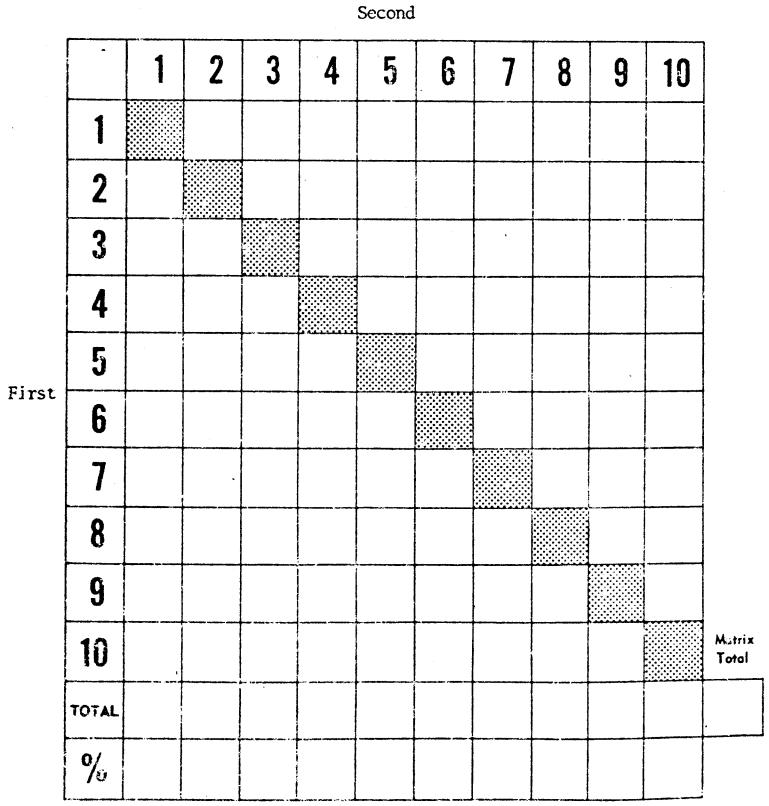
Second

First	1	2	3	4	5	6	7	8	9	10	
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											Matrix Total
TOTAL											
%											

Table IX shows cells that are referred to as the "steady-state cells." They lie along the diagonal of the matrix. Only when the behavior remains in a single category for longer than three seconds will there be tallies in these cells. If, for example, there is a tally in the 1-1 cell, it means that the teacher was accepting or clarifying student emotion during a period of more than three seconds. Note particularly that these cells along the diagonal are the only cells in the entire matrix that identify continuous talk in a single category; all other cells are transitional cells representing movement from one category to another. A build-up in any one of these cells, except 10-10, indicates that one specific kind of communication is being extended. Either the teacher is, or the students are, taking time to expand on the ideas being presented. Heavy loading in diagonal categories 1-7 indicates that the teacher is being deliberate in communication, taking time to extend his ideas or those of the students. Above-average or heavy loading in the 8 and 9 diagonal cells indicates that individual students are being permitted to expand their own ideas.

TABLE IX

Steady-State Cells



APPENDIX II

Examples of Matrices*

Meaningful interpretation of a matrix can be made only in terms of a teacher's specific teaching objectives. The six matrices included in this section are presented for the purpose of illustrating the use of some basic indices of teacher-pupil interaction (such as I/D ratio and percentage of tallies in the 3 - 3 cell). The summary data obtained by applying these indices provide an objective basis for interpretations of classroom interaction in terms of the teacher's goals.[1]

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*These matrices were compiled as part of a research project at Temple University and are reprinted here by permission of Evan Powell, University of Georgia, and Wilford Weber, Syracuse University.

[1]Edmund J. Amidon with Ned A. Flanders, The Role of the Teacher in the Classroom, 2nd ed. (Minneapolis, Minn.: Association for Productive Teaching, 1971).

PERCENTAGE MATRIX FOR TEACHER NO. 1

	1	2	3	4	5	6	7	8	9	10
1	0.40	0.05		0.15	0.25	0.10		0.10	0.30	0.20
2	0.20	1.26	0.66	1.46	1.16	1.06	0.10	0.45	1.56	0.35
3	0.10	0.80	1.92	2.62	2.32	0.30		0.10	0.91	0.40
4		0.10	0.15	1.36	0.66	0.40	0.05	6.75	3.93	0.55
5	0.10	0.30	0.30	3.28	6.75	1.31	0.25	0.60	2.67	0.55
6	0.05	0.20	0.05	0.45	0.60	0.05	0.05	1.81	0.66	0.91
7		0.05		0.30	0.35		0.05	0.05	0.15	
8	0.15	2.87	2.72	1.66	1.46	0.60	0.25	4.94	0.55	0.30
9	0.50	2.37	3.68	1.76	1.92	0.25	0.20	0.05	7.91	2.72
10	0.05	0.25		0.90	0.66	0.76		0.06	2.72	2.02
TOTAL	1.56	8.26	9.48	13.96	16.13	4.84	0.96	15.52	21.29	8.01
%										

Matrix Total

I/D Ratio = .603

Revised i/d Ratio = .769

i/d Row 8 = _____

i/d Rows 8 & 9 = _____

Extended Indirect = 5.39

Extended Direct = 0.15

Extended i/d = _____

3-3 Cell = 1.92

9-9 Cell = 7.91

Vicious Circle = _____

Teacher Talk 55.19

Student Talk 36.81

s/t .67

Teacher No. 1

1. Teacher talks 55%; this is less than the average amount of teacher talk.
2. Student talk is 37%; this is above average for the amount of student talk.
3. Over half--21% to 15%--of the student talk is student initiated.
4. Over half the teacher talk is indirect (the I/D ratio is over .50).
5. Each of seven cells in the matrix contains at least 3 per cent of the tallies in the matrix. Three of these cells are steady-state cells, [5-5], [8-8], and [9-9]. The other four cells are transition cells, (4-8), (4-9), (9-3), and (5-4). These cells indicate that the teacher spent much time in a question-answer lesson, with student ideas being presented at length [9-9] and accepted by the teacher (9-3).

PERCENTAGE MATRIX FOR TEACHER NO. 2

	1	2	3	4	5	6	7	8	9	10	
1	0.13			0.13							
2		0.53	0.93	0.80	0.80			0.13	1.20	0.26	
3		0.66	0.66	1.86	0.66	0.80			0.26		
4				0.80				2.79	2.39	0.13	
5	0.13	0.53		0.66	3.32	1.06	0.13	1.99	0.80	0.53	
6				0.40	0.26	2.13	0.40	4.26	0.80	0.93	
7				0.26	0.53	0.93	1.06	0.66	0.26	0.13	
8		2.39	1.20	0.93	2.26	1.73	1.46	32.44			
9		1.73	2.13	0.13	1.06	0.26	0.53		6.78	1.06	
10		0.40		0.13	0.26	0.66	0.26	0.13	1.20	1.06	Matrix Total
TOTAL	0.26	6.25	4.92	6.12	9.17	9.17	3.86	42.42	13.70	4.12	
%											

I/D Ratio = .442

Revised i/d Ratio = .467

i/d Row 8 = _____

i/d Rows 8 & 9 = _____

Extended Indirect = 2.91

Extended Direct = 4.52

Extended i/d = _____

3-3 Cell = 0.66

9-9 Cell = 6.78

Vicious Circle = _____

Teacher Talk 39.75

Student Talk 56.12

s/t 1.43

Teacher No. 2

1. Teacher No. 2 talks less than 50% of the time; this is substantially less than the average teacher talks.
2. The students talk over 50% of the time (56%).
3. Only about one fourth of the student talk is student-initiated talk.
4. Less than half the teacher talk is indirect, as is indicated by an I/D ratio of less than .50 (.442).
5. Each of four cells in the matrix contains at least 3 per cent of the matrix total. Three of these cells, the 5-5, 8-8, and 9-9 are steady-state cells. The 6-8 cell is a transition cell. The heavy concentration of tallies in the 8-8 and 5-5 indicate extended student talk following teacher direction.

PERCENTAGE MATRIX FOR TEACHER NO. 3

	1	2	3	4	5	6	7	8	9	10	
1	0.28	0.07		0.28	0.14	0.07					
2		1.62	1.19	1.62	0.84	1.12		0.21	0.14	0.56	
3		0.77	3.51	5.55	2.32	0.56		0.14	0.28	0.14	
4		0.14	0.14	1.54	0.14	0.28		11.17	2.25	0.56	
5	0.14	0.28	0.14	3.86	6.54	1.19	0.07	0.17	0.56	0.49	
6	0.07	0.21		0.42	0.77	2.18	0.14	2.25		1.34	
7				0.07	0.28	0.21	0.21				
8	0.28	3.65	5.41	2.32	1.05	0.98	0.21	8.43	0.35	0.28	
9		0.35	2.81	0.28	0.77				7.31	0.42	
10	0.07	0.21	0.07	0.28	0.84	0.77	0.14	0.63	1.05	2.03	Matrix Total
TOTAL	0.84	7.31	13.28	16.23	13.42	7.38	0.77	22.98	11.94	5.83	
%											

I/D Ratio = .636

Revised i/d Ratio = .724

i/d Row 8 = _____

i/d Rows 8 & 9 = _____

Extended Indirect = 7.44

Extended Direct = 2.74

Extended i/d = _____

3-3 Cell = 3.51

9-9 Cell = 7.31

Vicious Circle = _____

Teacher Talk 59.23

Student Talk 34.92

s/t .589

Teacher No. 3

1. Teacher No. 3 talks about as much as the average teacher, 59% of the time.
2. The students talk slightly more than the average, 35%.
3. About one third of the student talk is student-initiated talk.
4. Over half the teacher talk is indirect, as indicated by the I/D ratio, which is over .50 (.636).
5. Four steady-state cells contain over 3 per cent of the matrix total, 3-3 , 5-5 , 8-8 , and 9-9 .
6. Each of five transition cells contains 3 per cent or more of the tallies in the matrix. These high-frequency cells indicate patterns of question-answer, followed by praise or teacher acceptance that is relatively long in duration. There is an indication that this lesson includes extended periods of student-initiated ideas and extended teacher lecture.

PERCENTAGE MATRIX FOR TEACHER NO. 4

	1	2	3	4	5	6	7	8	9	10	
1											
2			1.29	0.92	0.55	0.55			2.21		
3		0.74	0.92	0.92	1.11	0.18	0.37		0.37		
4		0.18		3.50		1.66	0.18	2.58	6.09	2.21	
5		0.74		3.50	5.90	1.84	0.37		0.92	0.18	
6		0.18		1.29	0.37	3.87	0.37	4.06	2.95	1.29	
7		0.37		0.74	1.11	2.03	1.66	0.55	1.11	0.37	
8		1.11	0.37	1.84	2.03	1.29	0.92	2.95			
9		2.03	2.03	2.95	1.11	1.84	3.50	0.37	2.21	1.29	
10		0.18		0.74	1.29	1.11	0.55		1.48	4.43	Matrix Total
TOTAL		5.54	4.61	16.42	13.47	14.39	7.93	10.52	17.34	9.79	
%											

I/D Ratio = .426

Revised i/d Ratio = .313

i/d Row 8 = _____

i/d Rows 8 & 9 = _____

Extended Indirect = 2.95

Extended Direct = 7.93

Extended i/d = _____

3-3 Cell = 0.92

9-9 Cell = 2.21

Vicious Circle = _____

Teacher Talk 62.36

Student Talk 27.86

s/t .446

Teacher No. 4

1. Teacher No. 4 talks a little more than the average teacher, 62%.
2. The students talk a little less than average, 28%.
3. Over 65% of the student talk is student initiated.
4. The teacher is slightly more direct than indirect, as indicated by the I/D ratio, .43.
5. There are three steady-state cells containing 3 per cent of the tallies in the matrix and four transition cells with at least 3 per cent of the matrix total. There is a direction-response pattern, which appears with a question-student initiation pattern followed by teacher criticism. There are both extended lecture and extended questions present.

PERCENTAGE MATRIX FOR TEACHER NO. 5

	1	2	3	4	5	6	7	8	9	10	
1	0.27			0.18	0.09				0.09		
2		1.07	0.71	1.52	1.16	0.54			1.34	0.36	
3		1.79	0.98	1.70	1.70	0.71	0.18	0.09	0.71	0.09	
4			0.09	2.77	0.27	0.27		10.81	1.43	0.36	
5		0.54	0.09	3.40	6.70	1.25	0.18	0.09	2.23	0.27	
6			0.09	0.71	0.71	1.34	0.18	2.95	0.45	0.54	
7				0.45	0.27	0.45	0.71		0.18	0.09	
8		2.14	3.66	3.57	1.88	1.79	0.36	16.08	0.54	0.18	
9	0.27	1.07	2.32	1.34	1.34	0.45	0.54		4.11	0.18	
10	0.09	0.09		0.36	0.62	0.18		0.18	0.54	0.98	Matrix Total
TOTAL	0.63	6.70	7.95	16.00	14.74	6.97	2.15	30.20	11.62	3.04	
%											

I/D Ratio = .567

Revised i/d Ratio = .626

i/d Row 8 = _____

i/d Rows 8 & 9 = _____

Extended Indirect = 4.82

Extended Direct = 2.68

Extended i/d = _____

3-3 Cell = 0.98

9-9 Cell = 4.11

Vicious Circle = _____

Teacher Talk 55.14

Student Talk 41.82

s/t .758

Teacher No. 5

1. Teacher No. 5 talks less than the average, 55%.
2. The students in this class talk more than the average, about 42%.
3. Only about one fourth of the student talk is student-initiated talk.
4. More of the teacher talk is indirect than direct, as indicated by the I/D ratio of .57.
5. Each of the three steady-state cells contains over 3 per cent of the matrix total, 5-5 , 8-8 , and 9-9 , while each of four transition cells contains at least 3 per cent of the tallies in the matrix. These cells indicate a question-answer-question pattern, with the teacher frequently accepting student ideas. There is evidence that the students often gave long answers to questions and also that they were able to spend time presenting their own ideas.

PERCENTAGE MATRIX FOR TEACHER NO. 6

	1	2	3	4	5	6	7	8	9	10
1					0.06	0.06				
2		0.17	0.23	0.80	0.17	0.11			0.06	0.17
3	0.06	0.52	0.29	3.61	3.09	0.40			0.06	0.17
4		0.06	0.11	2.64	0.23	0.40		15.18	0.23	0.29
5		0.06	0.17	4.70	16.62	1.72	0.11	0.06	0.11	0.67
6		0.11					0.06		0.06	
7			0.06	0.23	0.11	0.17		0.06		0.06
8		0.67	7.10	2.75	2.06	2.46	0.46	8.25	0.11	0.11
9		0.06	0.23	0.11	0.29				0.34	
10	0.06	0.17		0.80	0.86	1.26	0.06	0.34	0.06	11.00
TOTAL	0.12	1.72	8.19	16.50	24.12	9.11	0.69	23.89	1.03	14.61
%										

Matrix Total

I/D Ratio = .439

Revised i/d Ratio = .506

i/d Row 8 = _____

i/d Rows 8 & 9 = _____

Extended Indirect = 1.27

Extended Direct = .23

Extended i/d = _____

3-3 Cell = 0.29

9-9 Cell = 0.34

Vicious Circle = _____

Teacher Talk 60.45

Student Talk 24.92

S/T .41

Teacher No. 6

1. The teacher talk is slightly below average, about 60%.
2. Student talk is about average, 25%.
3. Practically none (1%) of the student talk is student-initiated talk.
4. The teacher is slightly more direct than indirect, as is indicated by the I/D ratio of .43.
5. There are three steady-state cells over 3%, 5-5 , 8-8 , and 10-10 . There are five transition cells over 3%--the 4-8 , 8-3 , 5-4 , 3-4 , and 3-5 cells. This indicates a question-answer pattern with some extended student responses, acceptance of the responses, followed by lecture, and the extended teacher lecture. The 10-10 cell indicates extended silence or confusion.

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